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small one. Various powers were used up to 650, but I could see no new star, although the space between α and the companion for at least nine-tenths of their distance exhibited as black a sky as any part of the field. I am, therefore, unable to furnish any corroborative evidence of the existence of the suspected star.

*Bradstones, Sandfield Park, near Liverpool,*
*5th January*, 1859.

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## *Magnitudes of Forty-eight of the Minor Planets for the first Day of each Month of the Year* 1859. By Norman Pogson, Esq.

(*Communicated by Dr. Lee.*)

The following table, intended to facilitate the identification of the Minor Planets, has been furnished by Mr. Pogson, of Dr. Lee's Observatory, Hartwell House. It is computed upon the light-ratio 2·512 (*Monthly Notices* of the Royal Astronomical Society, Vol. xviii. p. 48).

The log. distances have been taken from the *Supplement to the Nautical Almanac* for 1862.

| No. | Planet. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Mean Opp. Mag. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ① | Ceres .. .. | 9·5 | 9·6 | 9·5 | 9·4 | 9·2 | 9·0 | 8·6 | 8·3 | 8·1 | 8·2 | 8·5 | 8·8 | 9·1 | 7·7 |
| ② | Pallas.. .. | 10·2 | 10·2 | 10·2 | 10·0 | 9·8 | 9·6 | 9·3 | 9·1 | 9·1 | 9·3 | 9·6 | 9·8 | 10·0 | 7·9 |
| ③ | Juno .. .. | 10·7 | 10·4 | 10·2 | 9·9 | 9·9 | 10·0 | 10·3 | 10·7 | 11·0 | 11·1 | 11·2 | 11·2 | 11·2 | 8·7 |
| ④ | Vesta .. .. | 8·3 | 8·3 | 8·3 | 8·3 | 8·1 | 7·9 | 7·7 | 7·3 | 7·0 | 6·9 | 7·1 | 7·5 | 7·9 | 6·6 |
| ⑤ | Astræa .. | 9·7 | 9·3 | 9·0 | 9·1 | 9·6 | 10·1 | 10·6 | 11·0 | 11·3 | 11·6 | 11·8 | 11·9 | 11·9 | 10·0 |
| ⑥ | Hebe .. .. | 10·5 | 10·3 | 10·1 | 9·9 | 9·5 | 9·2 | 8·7 | 8·2 | 7·7 | 7·4 | 7·5 | 7·9 | 8·4 | 8·6 |
| ⑦ | Iris .. .. | 9·5 | 9·6 | 9·6 | 9·6 | 9·6 | 9·6 | 9·6 | 9·5 | 9·4 | 9·3 | 9·2 | 8·9 | 8·7 | 8·6 |
| ⑧ | Flora .. .. | 11·1 | 10·9 | 10·5 | 10·1 | 9·7 | 9·7 | 9·9 | 10·3 | 10·6 | 10·8 | 10·9 | 11·0 | 11·0 | 8·9 |
| ⑨ | Metis .. .. | 10·4 | 10·2 | 9·8 | 9·5 | 9·4 | 9·7 | 10·0 | 10·4 | 10·7 | 11·0 | 11·1 | 11·2 | 11·2 | 8·9 |
| ⑩ | Hygeia .. | 10·2 | 10·3 | 10·6 | 10·8 | 11·0 | 11·2 | 11·3 | 11·3 | 11·2 | 11·1 | 10·9 | 10·6 | 10·2 | 9·8 |
| ⑪ | Parthenope | 10·8 | 10·9 | 11·0 | 11·1 | 11·1 | 11·0 | 10·9 | 10·7 | 10·5 | 10·1 | 9·8 | 9·7 | 9·9 | 9·5 |
| ⑫ | Victoria .. | 10·7 | 10·8 | 11·2 | 11·6 | 11·9 | 12·1 | 12·2 | 12·2 | 12·2 | 12·1 | 11·9 | 11·6 | 11·2 | 9·6 |
| ⑬ | Egeria .. | 10·9 | 11·2 | 11·4 | 11·5 | 11·5 | 11·5 | 11·4 | 11·2 | 11·0 | 10·8 | 10·4 | 10·1 | 9·7 | 9·9 |
| ⑭ | Irene .. .. | 9·6 | 9·2 | 8·8 | 8·7 | 8·9 | 9·4 | 9·8 | 10·2 | 10·6 | 10·9 | 11·1 | 11·2 | 11·3 | 9·7 |
| ⑮ | Eunomia .. | 11·2 | 10·9 | 10·6 | 10·2 | 10·0 | 10·0 | 10·2 | 10·5 | 10·7 | 10·9 | 11·0 | 11·1 | 11·0 | 9·1 |
| ⑯ | Psyche .. | 11·7 | 11·6 | 11·4 | 11·0 | 10·7 | 10·3 | 9·9 | 9·7 | 9·9 | 10·1 | 10·4 | 10·7 | 10·9 | 10·1 |
| ⑰ | Thetis .. | 10·6 | 10·7 | 11·0 | 11·3 | 11·6 | 11·8 | 11·9 | 11·9 | 11·9 | 11·8 | 11·6 | 11·3 | 11·0 | 9·9 |
| ⑱ | Melpomene | 11·9 | 11·6 | 11·3 | 10·8 | 10·3 | 9·7 | 9·4 | 9·3 | 9·5 | 9·8 | 10·0 | 10·2 | 10·4 | 9·5 |
| ⑲ | Fortuna .. | 11·9 | 11·7 | 11·3 | 10·9 | 10·5 | 10·3 | 10·3 | 10·5 | 10·8 | 11·1 | 11·3 | 11·4 | 11·4 | 9·7 |
| ⑳ | Massilia .. | 11·7 | 11·6 | 11·5 | 11·2 | 10·9 | 10·5 | 10·1 | 9·9 | 10·0 | 10·3 | 10·6 | 10·9 | 11·1 | 9·3 |
| ㉑ | Lutetia .. | 12·0 | 11·7 | 11·3 | 10·9 | 10·4 | 9·8 | 9·4 | 9·4 | 9·7 | 10·1 | 10·5 | 10·9 | 11·2 | 10·3 |

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| No. | Planet. | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Mean Opp. Mag. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ㉒ | Calliope .. | 11·4 | 11·1 | 10·9 | 10·9 | 11·2 | 11·5 | 11·8 | 12·1 | 12·3 | 12·4 | 12·5 | 12·5 | 12·4 | 10·6 |
| ㉓ | Thalia .. | 13·1 | 13·1 | 13·0 | 12·8 | 12·5 | 12·2 | 12·1 | 12·2 | 12·4 | 12·7 | 13·0 | 13·3 | 13·4 | 11·0 |
| ㉔ | Themis .. | 12·1 | 11·8 | 11·5 | 11·3 | 11·3 | 11·6 | 12·0 | 12·3 | 12·6 | 12·9 | 13·0 | 13·1 | 13·1 | 11·6 |
| ㉕ | Phocea .. | 11·7 | 11·9 | 12·3 | 12·6 | 12·9 | 13·1 | 13·2 | 13·2 | 13·2 | 13·1 | 12·9 | 12·6 | 12·2 | 10·5 |
| ㉖ | Proserpine.. | 12·2 | 12·4 | 12·5 | 12·6 | 12·5 | 12·4 | 12·2 | 12·0 | 11·7 | 11·5 | 11·2 | 11·3 | 11·6 | 10·7 |
| ㉗ | Euterpe .. | 12·1 | 12·0 | 11·7 | 11·4 | 11·1 | 10·8 | 10·8 | 11·1 | 11·5 | 11·8 | 12·0 | 12·2 | 12·3 | 9·9 |
| ㉘ | Bellona .. | 10·6 | 10·3 | 10·1 | 9·8 | 9·8 | 10·0 | 10·4 | 10·8 | 11·2 | 11·5 | 11·7 | 11·8 | 11·8 | 9·8 |
| ㉙ | Amphitrite | 11·1 | 10·9 | 10·7 | 10·4 | 10·0 | 9·6 | 9·4 | 9·4 | 9·6 | 10·0 | 10·3 | 10·5 | 10·7 | 9·1 |
| ㉚ | Urania .. | 10·3 | 10·7 | 11·1 | 11·4 | 11·6 | 11·8 | 11·9 | 11·9 | 11·9 | 11·9 | 11·7 | 11·5 | 11·2 | 10·1 |
| ㉛ | Euphrosyne | 13·6 | 13·6 | 13·5 | 13·4 | 13·1 | 12·8 | 12·5 | 12·3 | 12·1 | 12·1 | 12·3 | 12·5 | 12·7 | 11·6 |
| ㉜ | Pomona .. | 12·1 | 12·4 | 12·7 | 12·8 | 12·9 | 12·9 | 12·9 | 12·7 | 12·5 | 12·3 | 11·9 | 11·5 | 11·1 | 11·0 |
| ㉝ | Polyhymnia | 11·7 | 11·6 | 11·5 | 11·4 | 11·3 | 11·2 | 11·1 | 11·0 | 10·8 | 10·6 | 10·4 | 10·5 | 10·9 | 11·4 |
| ㉞ | Circe .. .. | 11·3 | 10·9 | 10·9 | 11·2 | 11·6 | 12·0 | 12·3 | 12·6 | 12·8 | 12·9 | 13·0 | 13·0 | 13·0 | 11·5 |
| ㊱ | Atalanta .. | 15·3 | 15·1 | 14·8 | 14·5 | 14·1 | 13·7 | 13·4 | 13·3 | 13·5 | 13·6 | 13·8 | 13·9 | 13·9 | 12·9 |
| ㊲ | Fides.. .. | 12·7 | 12·6 | 12·4 | 12·2 | 11·9 | 11·5 | 11·0 | 10·6 | 10·4 | 10·6 | 10·8 | 11·1 | 11·3 | 10·5 |
| ㊳ | Leda .. .. | 12·6 | 12·7 | 12·7 | 12·6 | 12·5 | 12·3 | 12·0 | 11·6 | 11·2 | 10·7 | 10·4 | 10·3 | 10·6 | 10·9 |
| ㊴ | Lætitia .. | 9·8 | 10·1 | 10·3 | 10·5 | 10·6 | 10·7 | 10·7 | 10·6 | 10·5 | 10·3 | 10·0 | 9·7 | 9·5 | 9·3 |
| ㊵ | Harmonia .. | 9·6 | 9·4 | 9·4 | 9·8 | 10·2 | 10·6 | 10·9 | 11·1 | 11·2 | 11·3 | 11·3 | 11·2 | 11·1 | 9·1 |
| ㊷ | Isis .. .. | 12·2 | 11·8 | 11·7 | 11·8 | 12·0 | 12·3 | 12·5 | 12·7 | 12·7 | 12·7 | 12·6 | 12·4 | 12·2 | 10·6 |
| ㊸ | Ariadne .. | 11·1 | 11·6 | 12·0 | 12·3 | 12·5 | 12·7 | 12·7 | 12·7 | 12·6 | 12·4 | 12·1 | 11·7 | 11·2 | 10·0 |
| ㊹ | Nysa .. .. | 12·0 | 12·2 | 12·2 | 12·2 | 12·1 | 12·0 | 11·8 | 11·6 | 11·2 | 10·8 | 10·4 | 9·9 | 9·5 | 10·4 |
| ㊺ | Eugenia .. | 12·3 | 12·6 | 12·8 | 12·9 | 13·0 | 12·9 | 12·8 | 12·7 | 12·4 | 12·1 | 11·8 | 11·5 | 11·4 | 11·0 |
| ㊻ | Hestia .. | 12·6 | 12·8 | 13·2 | 13·7 | 14·1 | 14·3 | 14·6 | 14·7 | 14·7 | 14·7 | 14·6 | 14·4 | 14·2 | 12·4 |
| ㊼ | Aglaia .. | 12·1 | 12·3 | 12·7 | 13·0 | 13·3 | 13·4 | 13·5 | 13·6 | 13·5 | 13·4 | 13·2 | 12·9 | 12·6 | 11·5 |
| ㊽ | Doris.. .. | 11·1 | 11·5 | 11·8 | 12·1 | 12·3 | 12·5 | 12·6 | 12·6 | 12·6 | 12·5 | 12·3 | 12·1 | 11·8 | 11·4 |
| ㊾ | Pales .. .. | 10·5 | 10·6 | 10·9 | 11·4 | 11·8 | 12·1 | 12·4 | 12·6 | 12·7 | 12·7 | 12·7 | 12·5 | 12·3 | 10·9 |
| ㊿ | Virginia .. | 13·4 | 13·4 | 13·3 | 13·6 | 13·9 | 14·3 | 14·6 | 14·8 | 14·9 | 15·0 | 14·9 | 14·8 | 14·6 | 12·3 |

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## *On Certain Phenomena in the Motions of Solar Spots.*

By R. C. Carrington, Esq.

The present short paper is in continuation of a preceding one inserted in the number for November, my object being to illustrate graphically and otherwise the divergence of individual spots in groups of small extent, and to establish clearly the circumstance that instances occur of change of position of detached spots, not explicable by change of form, but due to drift on the photosphere. It will then be seen that in any investigation of the elements of rotation of the sun, the movements observed in groups must be excluded as liable to special perturbations; that the discordances of the periods of rotation of the photosphere found by many previous investigators are

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